



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,457	08/24/2001	Gorou Ikegami	NECN 18.947	3656
26304	7590	11/06/2003	EXAMINER	
KATTEN MUCHIN ZAVIS ROSENMAN 575 MADISON AVENUE NEW YORK, NY 10022-2585			LEWIS, MONICA	
		ART UNIT	PAPER NUMBER	
		2822		

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/939,457	IKEGAMI ET AL.
	Examiner Monica Lewis	Art Unit 2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 08 August 2003.

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-13 is/are pending in the application.

4a) Of the above claim(s) 6-13 is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-5 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on 07 February 2003 is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.

4) Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_\_

## **DETAILED ACTION**

1. This office action is in response to the amendment filed August 8, 2003.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1-5 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCormick et al. (U.S. Patent No. 6,369,448) in view of Mostafazadeh et al. (U.S. Patent No. 5,783,870).

In regards to claim 1, McCormick et al. ("McCormick") discloses the following:

a) a semiconductor chip (412) having a plurality of film electrodes (416) on a rear surface of said semiconductor chip and a plurality of protruding bump electrodes (422) on a front surface of said semiconductor chip (For Example: See Figure 4); and

b) an insulator resin film (418) covering said semiconductor chip while exposing said film electrodes and a top portion of each of said protruding bump electrodes, said insulator resin film contacting side portions of each of said protruding bump electrodes (For Example: See Figure 4).

In regards to claim 1, McCormick fails to disclose the following:

a) a conductive film formed on said top portion of said protruding electrodes and configured as a plurality of interconnect lines

However, Mostafazadeh et al. ("Mostafazadeh") discloses the use of a conductive film formed on said top portion of said protruding electrodes (For Example: See Figure 4c). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of McCormick to include the use of a conductive film formed on said top portion of said protruding electrodes as disclosed in Mostafazadeh because it aids in providing communication among the components (For Example: See Column 3 Lines 40-48).

Additionally, since McCormick and Mostafazadeh are both from the same field of endeavor, the purpose disclosed by Mostafazadeh would have been recognized in the pertinent art of McCormick.

In regards to claim 2, McCormick discloses the following:

a) semiconductor chip is mounted on a printed circuit board, with said rear surface opposing said printed circuit board (For Example: See Column 6 Lines 59-61).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCormick et al. (U.S. Patent No. 6,369,448) in view of Mostafazadeh et al. (U.S. Patent No. 5,783,870) and Natsume (Japanese Patent No. 407335680).

In regards to claim 3, McCormick fails to disclose the following:

a) interconnect lines are connected to respective terminals of the printed circuit board by wire bonding.

However, Natsume discloses the connection to a printed circuit board by wire bonding (For Example: See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of McCormick to include

the connection to a printed circuit board by wire bonding as disclosed in Natsume because it aids in providing a connection among the various components (For Example: See Figure 1).

Additionally, since McCormick and Natsume are both from the same field of endeavor, the purpose disclosed by Natsume would have been recognized in the pertinent art of McCormick.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCormick et al. (U.S. Patent No. 6,369,448) in view of Mostafazadeh et al. (U.S. Patent No. 5,783,870), Hirano et al. (U.S. Publication No. 2002/0153618) and Ball (U.S. Patent No. 5,952,725).

In regards to claim 4, McCormick fails to discloses the following:

a) protruding electrodes has a base portion having a diameter larger than other portion thereof.

However, Hirano et al. (“Hirano”) discloses electrodes with a base larger than the other portion (For Example: See Figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of McCormick to include electrodes with a base larger than the other portion as disclosed in Hirano because it aids in providing electrical communication (For Example: See Abstract).

Additionally, since McCormick and Hirano are both from the same field of endeavor, the purpose disclosed by Hirano would have been recognized in the pertinent art of McCormick.

b) chip is sandwiched between and contacts a pair of printed circuit boards.

However, Ball discloses printed circuit boards with a chip mounted between (For Example: See Figure 8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of McCormick to include printed circuit boards with a chip mounted between as disclosed in Ball because it aids in providing electrical communication (For Example: See Column 8 Lines 1-4).

Additionally, since McCormick and Ball are both from the same field of endeavor, the purpose disclosed by Ball would have been recognized in the pertinent art of McCormick.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCormick et al. (U.S. Patent No. 6,369,448) in view of Mostafazadeh et al. (U.S. Patent No. 5,783,870) and Ohuchi et al. (U.S. Patent No. 5,999,413).

In regards to claim 5, McCormick fails to disclose the following:

a) a portion of a side surface of said semiconductor chip is exposed from said insulator resin film.

However, Ohuchi et al. ("Ohuchi") discloses the use of an exposed side of a chip (For Example: See Figure 3b). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of McCormick to include the use of an exposed side of a chip as disclosed in Ouchi because it aids in providing a place where signals can be input to external circuits (For Example: See Column 3 Lines 14-67 and Column 4 Lines 1-31).

Additionally, since McCormick and Ohuchi are both from the same field of endeavor, the purpose disclosed by Ohuchi would have been recognized in the pertinent art of McCormick.

### ***Double Patenting***

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686

F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1-5 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 6,608,372. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both deal with chip type semiconductor device.

In regards to claims 1-20, Ikegami discloses the following:

a) a substrate, electrodes and encapsulation.

***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 2822

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 703-305-3743. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ML

October 30, 2003



AMIR ZARABIAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800